Special $6,000 sensors will keep daily diaries of blacktip sharks off South Florida coast

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The migration of blacktip sharks to South Florida is a well-documented

pulse of wintertime energy as schools of the streamlined predators prowl their way south to warmer climes.

But beyond aerial images of shadows spilling across a field of blue, the daily diary of shark activity here remains a mystery.

On Monday, Florida Atlantic University researchers began a study to chronicle the minutia of shark life off Palm Beach County's coast with new sensors that measure movements as detailed as how many times they beat their tails to what time of day they prefer to make their close-up beach visits.

The sensors, which attach to the shark's dorsal fin and cost about $6,000 each, pop off after four days. Satellite and radio signals alert researchers to their whereabouts and a treasure trove of data.

"We have a unique opportunity here because we have a resident population of sharks milling about along the coast," said FAU professor Stephen Kajiura, who runs the university's Elasmobranch Research Laboratory in Boca Raton. "If you were to do this somewhere else, the shark may swim out into the open ocean and you'd never get the transmitter back."

First, though, the sharks must be caught, and that was the mission under overcast skies Monday as Kajiura and his team of four motored out the Lake Worth Inlet on a 23-foot open fisherman with a frozen block of chum dragging behind them.

Instead of using rod and reel, the team fishes with a drone and a drum line—a concrete anchor attached to a floating buoy and baited circle hook. The drum line is less harmful to the shark because it reduces fight time and allows the shark to stay submerged with water running over its gills before tagging, Kajiura said. Ten drum lines were dropped

overboard Monday south of the inlet and near the walled off portion of beach at the Palm Beach Country Club where there were no swimmers.

Zipping overhead, the drone finds clusters of sharks and the best place to drop the line.

"So where the drone is over there, there are about 100 sharks," said 22-year-old FAU graduate student Braden Ruddy, who peered into a covered iPad screen synched with the drone camera hovering about 100 yards from shore.

Ruddy and Kajiura are licensed drone operators.

"Technology has greatly increased our ability to fish effectively," Kajiura said.

The new sensor project is being paid for by a grant from the Colgan Foundation, a not-for-profit founded by Delray Beach resident Sean Colgan in 1995. Colgan, a Philadelphia native and former rower who won medals in World Cup championships and at the Pan American Games in the 1970s and early 1980s, started the foundation to support the sport of rowing, Catholic education and scientific research with an emphasis on conservation.

FAU was able to purchase six of the sensors with a Colgan grant. While they are costly up front, they are also reusable.

"The more information we have about the fine-scale movement of sharks, the better we understand them," Kajiura said. "Sharks are an important part of the ecosystem, and we want a healthy, robust ecosystem."

Also, if there are patterns when sharks are visiting beaches, lifeguards

can be on higher alert during those periods.

The first shark on the line Monday was 5 feet, 5 inches long. While its measurements and sex were recorded, it was also fitted with a National Marine Fisheries Service tag. The tag allows anglers who catch a shark to alert the service of its whereabouts, giving researchers a way to track shark movements.

The new sensor, a bright orange instrument the size of a Cracker Jack box, will come off the shark when metals on its attachment corrode in saltwater.

"We want to know when they are hanging out here, what are they doing?" said Ryan Stolee, 39, who is earning his master's degree in biology and overseeing the sensor project. "There are so many data points we'll be able to collect and once we get baseline information other students can ask questions for further study."

In about four hours, the group catches five sharks. That's more than they expected. They only brought two sensors.

"Five sharks, two transmitters and it's not even 11 o'clock yet," Kajiura said about the successful trip. "I guess we should have brought more transmitters."